

Final Environmental Assessment and Finding of  
No Significant Environmental Impact

Final Rule: Interim Storage for Greater than Class C Waste

I. THE PROPOSED ACTION

The Nuclear Regulatory Commission (NRC) is amending its regulations to allow licensing for the interim storage of Greater than Class C (GTCC) waste in a manner that is consistent with licensing the interim storage of spent fuel and will maintain Federal jurisdiction for storage of reactor-related GTCC waste. The final rule will only apply to the interim storage of GTCC waste generated or used by commercial nuclear power plants. These amendments will also simplify and clarify the licensing process. The final rule will grant in part and deny in part a petition for rulemaking submitted by Portland General Electric Company (PRM-72-2).

II. BACKGROUND

The Nuclear Regulatory Commission received a petition for rulemaking dated November 2, 1995, submitted by Portland General Electric Company. The petition was docketed as PRM-72-2 and published in the Federal Register, with a 75-day comment period, on February 1, 1996 (61 FR 3619).

The petitioner requested that the NRC amend 10 CFR Part 72 to add the authority to store radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in 10 CFR 61.55.<sup>1</sup> This material is commonly referred to as "Greater than Class C" waste or GTCC waste. GTCC waste is generally unsuitable for near-surface disposal as low-level waste (LLW), even though it is considered as LLW. 10 CFR 61.55(a)(2)(iv)

---

<sup>1</sup> In 10 CFR Part 61.55, "Waste Classification," the NRC defines disposal requirements for three classes of low-level waste which are considered generally suitable for near-surface disposal. These are Class A, B, and C. Class C waste is required to meet the most rigorous disposal requirements.

requires that this type of waste must be disposed of in a geologic repository unless approved for an alternative disposal method on a case-specific basis by the NRC.

The petitioner is an NRC-licensed utility responsible for the Trojan Nuclear Plant (TNP). In the petition, the petitioner anticipated that during decommissioning of TNP it would need to dispose of GTCC waste. The TNP decommissioning plan specifies the transfer of spent reactor fuel, currently being stored in the spent fuel pool, to an onsite Independent Spent Fuel Storage Installation (ISFSI) licensed under 10 CFR Part 72. The petitioner requested that GTCC waste also be stored at the ISFSI pending its transfer to a permanent disposal facility. The petitioner suggested that, because the need to provide interim storage for GTCC waste is not specific to TNP but is generic, the regulations in 10 CFR Part 72 should be amended to explicitly provide for the isolation and storage of GTCC waste in a licensed ISFSI.

The petitioner believes that storage of GTCC waste under 10 CFR Part 72 will ensure safe interim storage. This storage would provide identical public health and safety and environmental protection as required for spent fuel located at an ISFSI. For example, Subpart F of 10 CFR Part 72 (General Design Criteria) establishes design, fabrication, construction, testing, quality standards, maintenance, and performance requirements for structures, systems, and components important to safety.

The specific changes proposed in the petition would explicitly include interim storage of GTCC waste within the Purpose, Scope, and Definitions sections of 10 CFR Part 72 in order to treat GTCC waste in a similar manner to spent nuclear fuel. The revised definitions would only apply to the interim storage of GTCC waste under the authority of 10 CFR Part 72.

The notice of receipt of the petition for rulemaking invited interested persons to submit written comments concerning the petition. The NRC received six comment letters. Five comment letters were received from nuclear facilities and one from the Nuclear Energy Institute. The Nuclear Energy Institute provided another letter on this subject directly to the NRC Chairman on February 2, 1999, and the NRC responded on March 25, 1999. The comments were reviewed and considered in the development of NRC's decision on this petition. These comments are available in the NRC Public Document Room.

All six commenters supported the petition. Two of the commenters (Sacramento Municipal Utility District and Yankee Atomic Electric Company) are currently decommissioning their reactors.

As a result of the petition and the comment letters, the NRC developed a draft rulemaking plan to further consider the development of a rule that would meet the intent of the petition. In SECY-97-056, dated March 5, 1997, the NRC staff provided a draft rulemaking plan to the Commission outlining a rule that would modify 10 CFR Part 72 to allow storage of material, which when disposed of would be classified as GTCC waste, under the authority of 10 CFR Part 72 using the performance criteria of this part. As discussed in this draft rulemaking plan, licensees are authorized to store GTCC waste pursuant to the regulations in 10 CFR Part 30 and/or Part 70. Therefore, the draft rulemaking plan discussed an additional option to store GTCC waste under 10 CFR Part 72 while maintaining the option to store this waste using the authority of 10 CFR Parts 30 and 70. This plan was sent to the Agreement States for their comments on April 18, 1997. Five States provided comments -- Illinois, Maine, New York, Texas, and Utah.

The draft rulemaking plan did not require that the licensing jurisdiction for GTCC waste remain with NRC, but did suggest that Agreement States could voluntarily relinquish their licensing authority for GTCC waste stored at an ISFSI. The draft rulemaking plan requested Agreement State input relative to their likelihood of relinquishing authority for licensing when an ISFSI or a Monitored Retrievable Storage Installation (MRS) is involved in storing GTCC waste. Three of the four State commenters indicated that they would not voluntarily relinquish their authority.

The NRC published the proposed rule, "Interim Storage for Greater than Class C Waste" in the Federal Register on June 16, 2000 (65 FR 37712). The NRC received 18 comment letters on the proposed rule. These comments and responses are discussed in the "Comments on the Proposed Rule" section of the Federal Register notice publishing the final rule.

### III. THE NEED FOR THE PROPOSED ACTION

Current NRC regulations are not clear on the acceptability of storing reactor-related GTCC waste co-located at an ISFSI or an MRS. Co-location is the storage of spent fuel and other radioactive material in their respective separate containers. This situation has created confusion and uncertainty on the part of decommissioning reactor licensees and may create inefficiency and inconsistency in the way the NRC handles GTCC waste licensing matters.

Currently, 10 CFR Part 50 licensees (Domestic Licensing of Production and Utilization Facilities) are authorized to store all types of reactor-related radioactive materials, including material that, when disposed of, would be classified as GTCC waste. The GTCC waste portion is currently being stored either within the reactor vessel, in the spent fuel pool, or in a radioactive material storage area, pending development of a suitable permanent disposal facility. Reactor-related GTCC waste is typically in a solid form (i.e., mostly activated metals) such as reactor vessel internals, nozzles, and in-core instrumentation. A small amount of GTCC waste may also be in the form of a sealed source that was used during the operation of the reactor. GTCC waste may consist of either byproduct material or special nuclear material. The authority to license the possession and storage of GTCC waste is contained within 10 CFR Part 30 for byproduct material and in 10 CFR Part 70 for special nuclear material. Under 10 CFR 50.52, the Commission may combine multiple licensing activities of an applicant that would otherwise be licensed individually in single licenses. Thus, the 10 CFR Part 50 license authorizing operation of production and utilization facilities currently includes, within it, the authorization to possess byproduct and special nuclear material that would otherwise need to be separately licensed under 10 CFR Parts 30 and/or 70.

Under current regulations, while a 10 CFR Part 50 license is in effect, a reactor licensee can store spent fuel generated at the reactor site under either a general license pursuant to 10 CFR 72.210 or a specific license pursuant to 10 CFR Part 72. In addition, the reactor licensee who has a 10 CFR Part 50 license, can store GTCC waste generated at the reactor site under the 10 CFR Parts 30 and 70 authority included in the 10 CFR Part 50 license.

Under current regulations, when the 10 CFR Part 50 license terminates, a reactor licensee can continue to store spent fuel generated at the reactor site under a specific license pursuant to 10 CFR Part 72. However, a general license under 10 CFR 72.210 would terminate because the 10 CFR Part 50 license has terminated, and the reactor licensee would need to apply for a specific license under 10 CFR Part 72 in order to continue to store spent fuel at the reactor site. Furthermore, the 10 CFR Parts 30 and 70 licenses included in the 10 CFR Part 50 licenses are also terminated when the 10 CFR Part 50 license terminates and the reactor licensee can only store GTCC waste by applying for a specific NRC license under 10 CFR Parts 30 and/or 70.

Under the draft final regulations, when a 10 CFR Part 50 license is terminated, the reactor licensee will need only to apply for an NRC license, but will have the option to store GTCC waste under either 10 CFR Part 72 or under 10 CFR Parts 30 and 70. This draft final regulation maintains Federal jurisdiction for GTCC waste under either approach (10 CFR Part 72 or 10 CFR Parts 30 and 70).

The changes in this rulemaking will allow a 10 CFR Part 72 specific licensee to co-locate reactor-related GTCC waste within an ISFSI or an MRS. Applicants for a specific license will be required to provide a Safety Analysis Report (SAR) which will describe how the GTCC waste is to be stored. The SAR would describe how structures, systems, and components that are important to safety are properly designed to allow the storage of GTCC waste within an ISFSI or MRS. The applicant shall ensure that the co-location of this radioactive material does not have an adverse affect on the safe storage of spent fuel and the operation of the ISFSI. Based on an acceptable review of the SAR, the NRC would issue a 10 CFR Part 72 specific license. Current 10 CFR Part 72 specific license holders would be required to submit an application to amend their 10 CFR Part 72 license, if they desire to store GTCC waste at their ISFSI.

Under one possible interpretation of existing regulations, storage of GTCC waste at an ISFSI after termination of the reactor licensee's 10 CFR Part 50 license could lead to (1) NRC regulating the spent fuel at an ISFSI and (2) Agreement States regulating GTCC waste at the same location. The NRC has exclusive regulatory authority over a reactor licensee's storage of all radioactive material, including both spent fuel and of GTCC waste, during the term of the

10 CFR Part 50 license. Under this regulatory interpretation, once the 10 CFR Part 50 license is terminated an Agreement State would have authority for any GTCC waste stored by the utility.

The NRC believes that decommissioning activities at commercial nuclear power plants will generate relatively small volumes of GTCC waste relative to the amount of spent fuel that exists at these sites. GTCC waste exceeds the concentration limits of radionuclides established for Class C in §§ 61.55(a)(3)(ii), 61.55(a)(4)(iii), or 61.55(a)(5)(ii). GTCC waste is not generally acceptable for near-surface disposal at licensed low-level radioactive waste disposal facilities. There currently are no routine disposal options for GTCC waste. Because GTCC waste is unlikely to be disposed of at a LLW disposal site regulated under 10 CFR Part 61, the GTCC waste must be stored in the interim.

In general, reactor-related GTCC wastes can be grouped into two categories. The first is activated metals, irradiated metal components from nuclear reactors such as core shrouds, support plates, and core barrels. The second is process wastes such as filters and resins resulting from the operation and decommissioning of reactors. In addition, there may be a small amount of GTCC waste generated from other activities associated with the reactor's operation (e.g., reactor start-up sources).

The Low-Level Radioactive Waste Policy Amendments Act of 1985 (Pub. L. 99-240) gave the Federal Government (U.S. Department of Energy (DOE)) the primary responsibility for developing a national strategy for disposal of GTCC waste. The Act also gave the NRC the licensing responsibility for a disposal facility for GTCC waste. Until a disposal facility is licensed, there is a need for interim storage of GTCC waste.

In developing storage criteria, the NRC was cognizant of both potential DOE disposal criteria to preclude unnecessarily allowing a storage option that is unacceptable for disposal and potential adverse interactions between spent fuel and various types of GTCC waste. The staff believes that properly addressing potential adverse conditions from commingling spent fuel with certain types of GTCC waste presents significant safety and technical issues. In addition, because the DOE has not yet identified such criteria for a disposal package, the NRC is concerned that storage of GTCC waste and spent fuel in the same container may be

unacceptable for placement in the geologic repository. Therefore, the rule precludes the commingling of GTCC waste and spent fuel, except on a case-by-case basis, because the NRC desires to formulate regulations which both reduce radiological exposure and costs associated with repackaging the spent fuel and GTCC waste into two separate containers for disposal. Note that this in no way changes the current NRC and industry practice of allowing the commingling of spent fuel and certain specific components associated with, and integral to, spent fuel (e.g., burnable poison rod assemblies, control rod elements, and thimble plugs). In support of this rulemaking, the staff is developing Interim Staff Guidance for NRC staff and licensee use in determining storage criteria for various GTCC waste types.

This rule also precludes storage of liquid GTCC waste under 10 CFR Part 72. However, there are alternatives for a 10 CFR Part 50 licensee that desires to terminate their license yet still possesses liquid GTCC waste. These alternatives include the licensee's submission of an application for a 10 CFR Part 30 or 70 license, with the appropriate conditions for storage of liquid GTCC waste.

#### IV. ALTERNATIVES TO THE PROPOSED ACTION

There are three alternatives the NRC considered to resolve the petition from the Portland General Electric Company. All three are protective of public health and safety, but differ in implementation and resources. For the reasons discussed, the NRC is implementing alternative three.

ALTERNATIVE 1: Deny the petition. The first option is to clarify that NRC's existing regulations allow storage of GTCC waste co-located at the licensees ISFSI under a 10 CFR Part 30 or Part 70 license conferred as part of their 10 CFR Part 50 license. However, upon termination of the 10 CFR Part 50 license it would be necessary to apply for a specific 10 CFR Part 30 or Part 70 license (or, under a possible interpretation of current regulations, under equivalent Agreement State 10 CFR Part 30 or Part 70 regulations) if GTCC waste is to remain at the ISFSI. Under this option, the petition would be denied because no changes to NRC's regulations are necessary to meet the specific requirements of the petitioner. The NRC could issue an Information Notice or issue a clarifying rule change to 10 CFR Part 72 that makes it clear that

GTCC waste can be stored at an ISFSI under a 10 CFR Part 50 license during reactor operations, or under a 10 CFR Part 30 or Part 70 license either during operations or after the Part 50 license is terminated.

However, the applicable regulations in 10 CFR Parts 30 and 70 do not provide any explicit criteria for this unique waste type. Therefore, the licensee, in their license application, would need to propose site-specific criteria and the NRC would need to review each license application on a case-by-case basis or the NRC could develop generic criteria.

This alternative is the least resource intensive in the short term (i.e., no rulemaking would be undertaken), but the NRC believes there are several disadvantages. First, since each licensee would propose site-specific criteria, the licensing process could be more resource intensive for the licensee (need to develop appropriate criteria) and for the NRC to review and approve this criteria on a case-by-case basis. This could also result in numerous regulatory proposals throughout the country. Second, these site-specific criteria could be raised as issues during a potential licensing proceeding on the 10 CFR Part 72 license. And third, after termination of the 10 CFR Part 50 license, licensees would need multiple licenses to store GTCC waste in the same location as spent fuel.

Although this alternative saves resources in the short term, the NRC believes that denying the petition would impose an unnecessary regulatory burden on reactor licensees and would require more NRC resources in the long-term than developing a rulemaking as discussed in alternatives two and three.

ALTERNATIVE 2: Change the regulations in 10 CFR Part 30, 70, and 72 to allow interim storage of NRC-licensed reactor-related GTCC waste within an ISFSI or MRS licensed by the NRC, using criteria in 10 CFR Part 72. The alternative deals only with GTCC waste used or generated by a commercial power reactor licensed under 10 CFR Part 50 (i.e., not a research reactor) and does not include any other sources of GTCC waste. Storage and licensing requirements would be fully contained in 10 CFR Part 72. Interim storage of GTCC waste would be permitted under a 10 CFR Part 72 specific license. Allowing interim storage of GTCC waste under a 10 CFR Part 72 specific license would meet the request of the petitioner. However, one result of this

alternative is the potential dual regulation of the licensed facility by both the NRC and an Agreement State. NRC believes having two agencies responsible for licensing and inspecting the same facility is not the most efficient use of resources. This disadvantage is further elaborated on in the discussion of alternative three which reserves all reactor-related GTCC waste licensing to the NRC. In a non-Agreement State only one license would be needed for storage of both spent fuel and GTCC waste under 10 CFR Part 72. Under this alternative, the NRC could change the compatibility level of portions 10 CFR Part 72 to allow Agreement States to license reactor-related GTCC waste in a manner similar to the NRC.

The NRC believes that this alternative does provide a more efficient means (relative to alternative one) of implementing storage of GTCC waste co-located at an ISFSI or an MRS than what is currently permitted by the regulations. That is, revising the regulations to allow storage of GTCC waste under 10 CFR Part 72 does not preclude storing it under 10 CFR Part 30 or Part 70. 10 CFR Part 72 was developed specifically for an ISFSI and an MRS. The licensing process will be clearer and more straightforward by having all related licensing under one part. Criteria in 10 CFR Part 72 would be used for the GTCC waste. Although the GTCC waste would meet requirements in 10 CFR Part 72, the individual waste types are different than spent fuel. The GTCC waste is in a solid form (i.e., mostly activated metals) such as reactor internals, nozzles, and in-core instrumentation. Specific criteria will be added to 10 CFR Part 72 to preclude storage of liquid GTCC waste within an ISFSI or an MRS. However, there are alternatives for a 10 CFR Part 50 licensee that desires to terminate their license yet still possess liquid GTCC waste. These alternatives include the licensee's submission of an application for a 10 CFR Part 30 or 70 license, with the appropriate conditions for storage of liquid GTCC waste, or the licensee's submission of a request for an exemption from the requirements of 10 CFR Part 72.

Minor changes would be made to 10 CFR Parts 30 and 70 to exempt 10 CFR Part 72 licensees who possess to store power reactor-related GTCC waste within an ISFSI or MRS from the requirements in 10 CFR Parts 30 and 70 following termination of their 10 CFR Part 50 license. This would prevent the need to obtain multiple licenses.

ALTERNATIVE 3: Change the regulations in 10 CFR Parts 30, 70, 72 and 150 to allow interim storage of NRC-licensed reactor-related GTCC waste within an ISFSI or MRS licensed only by the NRC. This alternative is the same as alternative two except that licensing the storage of reactor-related GTCC waste would be reserved to the NRC. Therefore, an additional change is being proposed for 10 CFR Part 150. Licensing would be reserved to the NRC regardless of whether the GTCC waste was licensed under 10 CFR Part 30, 70, or 72.

Because GTCC waste is initially under Federal jurisdiction while the reactor facility is operated and the ultimate disposal of GTCC waste is also under Federal jurisdiction, the NRC believes that the interim period between termination of a reactor license and ultimate disposal should also remain under Federal jurisdiction. GTCC waste will likely end up in a geologic repository with spent fuel. Spent fuel can be stored in an ISFSI or a MRS pending ultimate disposal. Therefore, for efficiency and consistency of licensing, the NRC believes that 10 CFR Part 72 should be modified to also allow storage of GTCC waste within these facilities under NRC's jurisdiction. The existing regulatory scheme, which could allow for Federal-State-Federal jurisdiction over the generation, interim storage, and disposal of GTCC, waste is an inefficient approach. It is inefficient for NRC and an Agreement State to both spend scarce resources to license and inspect an ISFSI that stores both spent fuel and GTCC waste. This alternative will allow the applicant to obtain only one 10 CFR Part 72 license for storage of spent fuel and GTCC waste. The same exemption from 10 CFR Parts 30 and 70 as discussed in alternative 2 would be used. Additionally, 10 CFR Part 150 would require conforming changes to clarify NRC's exclusive jurisdiction over reactor-related GTCC waste.

## V. REGULATORY ACTION

The NRC is modifying 10 CFR Parts 30, 70, 72 and 150 as discussed in alternative three.

This rule will allow storage of reactor-related GTCC waste under a 10 CFR Part 72 specific license. The changes will modify 10 CFR Part 72 to allow storage of GTCC waste under this part using the appropriate criteria of 10 CFR Part 72. This will provide a more efficient means of implementing what is essentially already permitted by the regulations (storage of

GTCC waste co-located at an ISFSI or an MRS). That is, revising the regulations to allow storage of reactor-related GTCC waste under 10 CFR Part 72 does not preclude the option of storing it under a 10 CFR Part 30 or 70 license.

This rule will permit the co-locating of spent fuel and solid, reactor-related, GTCC waste in different casks and containers within an ISFSI or MRS; but it will not permit the commingling of spent fuel and GTCC waste in the same storage cask, except for specific GTCC waste components associated with, and integral to, the spent fuel. Additionally, this rule will not permit the storage of liquid, reactor-related, GTCC waste. However, a licensee or applicant may submit information to the NRC applying for approval for commingling of spent fuel and solid, reactor-related, GTCC waste in the same storage cask, or storing liquid, reactor-related, GTCC waste. The licensee or applicant must demonstrate that there will be no adverse effects on public health and safety and the environment from this type of storage. The NRC will review and approve these types of requests on a case-by-case basis. When storing spent fuel and GTCC waste in different containers within an ISFSI or MRS, the licensee or applicant must provide a description of how storage of the GTCC waste will not have an adverse effect on the ISFSI or MRS or on public health and safety and the environment.

Without this change, after termination of the 10 CFR Part 50 license, a licensee would need multiple licenses -- 10 CFR Part 72 for spent fuel and 10 CFR Part 30 or 70 (or both) for GTCC waste. Having one license for the ISFSI (or MRS) under 10 CFR Part 72 will be simpler and less burdensome for both licensees and the NRC, relative to approval and management.

The NRC believes that the concept proposed in the petition of storing GTCC waste under the provisions of 10 CFR Part 72 is valid. However, the NRC also believes that the method proposed by the petitioner, that is modifying the definition of spent fuel to include GTCC waste, could lead to confusion. Modifying the definition of spent fuel would only apply to spent fuel as defined under 10 CFR Part 72 and would not be technically accurate.

Therefore, the NRC is adding a definition of GTCC waste within § 72.3 that will be consistent with the intent of 10 CFR 61.55. The NRC has evaluated 10 CFR Part 72 to determine which sections need to be modified to accommodate storage of solid GTCC waste

co-located with spent fuel within an ISFSI or an MRS. The majority of the changes to 10 CFR Part 72 are simply to add the term “GTCC waste” to the appropriate sections and paragraphs (typically immediately after the terms “spent fuel or high-level waste”). Section 72.120 would be revised to require that GTCC waste be in a solid form.

Minor changes are being made to 10 CFR Parts 30 and 70 to exempt 10 CFR Part 72 licensees who possess to store power reactor-related GTCC waste within an ISFSI or MRS from the requirements in 10 CFR Parts 30 and 70 following termination of their 10 CFR Part 50 license. This will prevent the need to obtain multiple licenses.

10 CFR Part 150 is being modified to be consistent with the changes in 10 CFR Part 72. The change to 10 CFR Part 150 (Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters Under Section 274) will specify that any GTCC waste that is stored in an ISFSI or an MRS is under NRC jurisdiction. This part will also be modified to state that licensing the storage of any GTCC waste that originates in, or is used by, a facility licensed under 10 CFR Part 50 (a power reactor) is the responsibility of the NRC.

The NRC will continue to recover costs for generic activities related to the storage of GTCC waste under 10 CFR Part 72 through 10 CFR Part 171 annual fees assessed to the spent fuel storage/reactor decommissioning class of licensees. Subsequent to issuing the final revision to 10 CFR Part 72, 10 CFR Part 170 will be amended to clarify that full costs fees will be assessed for amendments and inspections related to the storage of GTCC waste under 10 CFR Part 72.

## VI. ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

The Commission has determined, under the National Environmental Policy Act of 1969 (NEPA), as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and therefore, an environmental impact statement (EIS) is not required.

This Environmental Assessment (EA) was prepared in accordance with the Commission's regulations in 10 CFR Part 51 to implement the requirements of NEPA. The NRC evaluation has led to the conclusion that the revisions to 10 CFR Parts 30, 70, 72 and 150 will not result in any activity that significantly affects the quality of the human environment. The revisions will provide reactor licensees an additional option of storing GTCC waste under a specific 10 CFR Part 72 license using criteria within that part. Interim storage of GTCC waste at an ISFSI or an MRS will be in a passive mode with no human intervention needed for safe storage.

The purpose of this EA is to provide the rationale that supports the finding that this rulemaking will have no significant environmental effects. This rule deals with the establishment of licensing criteria which will allow for the storage of reactor-related GTCC waste within an ISFSI or MRS. The rule will use criteria within 10 CFR Part 72. The criteria within 10 CFR Part 72 was established for spent nuclear fuel and HLW and the accompanying environmental reviews were performed for spent fuel and HLW. These analyses concluded that storage of spent fuel and HLW using the approved criteria would not result in any activity that significantly affects the quality of the human environment.

As described in NUREG 1092, entitled, "Environmental Assessment for 10 CFR Part 72 Licensing Requirements for the Independent Storage of Spent Fuel and High-Level Radioactive Waste," dated August 1984, the NRC staff concluded that storage of spent fuel and HLW within ISFSIs would not result in any activity that significantly affects the quality of the human environment. From a review of this NUREG and current NRC and industry practice of allowing the commingling of spent fuel and certain specific components associated with, and integral to, spent fuel (e.g., burnable poison rod assemblies, control rod elements, and thimble plugs), the staff has concluded that using 10 CFR Part 72 criteria has no significant environmental impacts. This review considered functional areas of heat generation, criticality, structural stability, and radiation risk from dry storage within the ISFSI.

GTCC wastes from reactors are, for the most part, generated from two procedures -- operating wastes and decommissioning wastes. During both operating and decommissioning, GTCC wastes include activated metals and process waste. Operating GTCC waste is

generated periodically during routine operations. These wastes become available for storage at the end of each refueling cycle. Decommissioning wastes are generated when a reactor closes, a one time event that generates the majority of GTCC waste. In addition, there may be a small amount of GTCC waste generated from other activities associated with the reactor's operation (e.g., reactor start-up sources).

Activated metal consists of irradiated metal components from the reactor vessel. This internal hardware, typically stainless steel, (i.e., core shroud, support plates, and in-core instruments, etc.) absorbs neutrons during reactor operations and becomes highly radioactive. The bulk of the total activity in activated metals is from short-lived radionuclides cobalt 60, a gamma emitter, and iron 55, a beta emitter. The longer-lived radionuclides, primarily nickel 63, nickel 59, and niobium 94, determine classification. The radionuclides that determine classification are measured by indirect means. There are trace amounts of fissile material (i.e., special nuclear material) contained in the activated metal.

Process wastes classification is determined primarily by cesium 137, a gamma emitter, carbon 14 and strontium 90, beta emitters, and alpha-emitting transuranics. Process wastes generally do not contain much, if any, nickel, niobium, or fissile material.

In 1993, there was approximately 16 cubic meters of GTCC waste from nuclear reactors, containing approximately  $1.5 \times 10^5$  TeraBecquerels (TBq) [4 million curies].<sup>2</sup> By 2055, it is estimated that there will be approximately 1300 cubic meters of GTCC waste containing approximately  $3.3 \times 10^6$  TBq [88 million curies]. By comparison, it is estimated that there will be approximately 63,000 cubic meters of commercial spent fuel containing over  $1.3 \times 10^8$  TBq [3.5 billion curies].<sup>3</sup> Over 90 percent of the 88 million GTCC waste curies are projected to come from activities associated with decommissioning nuclear reactors. Also, pressurized water

---

<sup>2</sup> Greater-Than-Class C Low-Level Radioactive Waste Characterization: Estimated Volumes, Radionuclide Activities, and Other Characteristics. DOE/LLW-114, Revision 1, September 1994.

<sup>3</sup> Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County Nevada. Volume II, Appendix A, July 1999.

reactors (PWRs) will produce about 10 times the number of curies of GTCC waste that boiling water reactors (BWRs) will produce.

Therefore, over an estimated 40 year life of either a PWR or a BWR, GTCC waste will comprise less than three percent of the volume and curie content versus the volume and curie content of the spent fuel generated.

The radioactive isotope contents of GTCC waste in activated metals is a subset of the isotopes contained within spent fuel and HLW that can be currently stored in an ISFSI. Because of the limited amount of material that will undergo radioactive decay, the amount of decay heat generated is less than similar aged spent fuel. As described above, the total TBq (curie) content and volume of GTCC waste is significantly less than the spent fuel and HLW already scheduled to be stored within ISFSIs licensed under 10 CFR Part 72.

Similar to activated metals, the process GTCC waste is a subset of the isotopes contained within spent fuel and HLW. The NRC is requiring that process waste be solidified as a requirement for storage within the ISFSI or MRS. The process material is significantly less than the amount of GTCC waste from reactor components.

The NRC finds for the following reasons that storing NRC-licensed reactor-related GTCC waste using 10 CFR Part 72 criteria has no significant environmental impacts.

- (1) The smaller source term available for release from normal operations, or as a result of an accident, involving GTCC waste as compared to spent fuel or HLW;
- (2) The smaller total volume and curie content of GTCC waste as compared to spent fuel and HLW;
- (3) The previous findings related to the environmental impacts in NUREG-0575, "Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel," dated August 1979, and NUREG-1092, "Environmental

Assessment for 10 CFR Part 72 “Licensing Requirements for the Independent Storage of Spent Fuel and High-Level Radioactive Waste”; and

(4) GTCC waste is already being safely stored by 10 CFR Part 50 licensees.

Re-licensing of this material under a 10 CFR Part 72 specific license requires an approved SAR. The approval process requires that each application or amendment be individually reviewed and approved before storage would be allowed under a specific 10 CFR Part 72 license.

## VII. FINDING OF NO SIGNIFICANT IMPACT

Based on the foregoing environmental assessment, the NRC concludes that this rulemaking, entitled “Interim Storage for Greater Than Class C Waste,” will not have a significant incremental effect on the quality of the human environment. Therefore, the NRC has determined that an environmental impact statement is not necessary for this rulemaking.

The documents referenced may be examined at the NRC Public Document Room, 11555 Rockville Pike, Rockville, MD.

## VIII. AGENCIES AND PERSONS CONTACTED

The draft EA was developed as part of the proposed rule in which public comments were solicited on the entire rulemaking package. No comments were received related to the draft EA. No additional agencies or persons outside the NRC were contacted in connection with the preparation of this EA.